

EJVES Extra 5, 1–2 (2003)

doi: 10.1016/S1533-3167(03)00010-4, available online at <http://www.sciencedirect.com> on **SCIENCE @ DIRECT®**

## SHORT REPORT

# Pseudo-Aneurysm of an Anomalous Anterior Tibial Artery following Total Knee Replacement

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*Key Words: Pseudo-Aneurysm; Anomalous; Anterior tibial artery; Total knee replacement.*

### Introduction

We present the case of a 56-year-old male presenting with a pseudo-aneurysm of the anterior tibial artery and compartment syndrome after total knee replacement (TKR).

### Case Report

A 56-year-old male underwent a TKR. Twenty four hours post-operatively he developed intense worsening calf pain and swelling along with tingling and paraesthesia. Examination revealed a massively swollen tender calf with extensive bruising along with diminished distal pulses barely audible on Doppler, (Fig. 1) impaired sensation and a delayed capillary refill suggestive of compartment syndrome. A clinical diagnosis of probable intra-operative vascular injury was made.

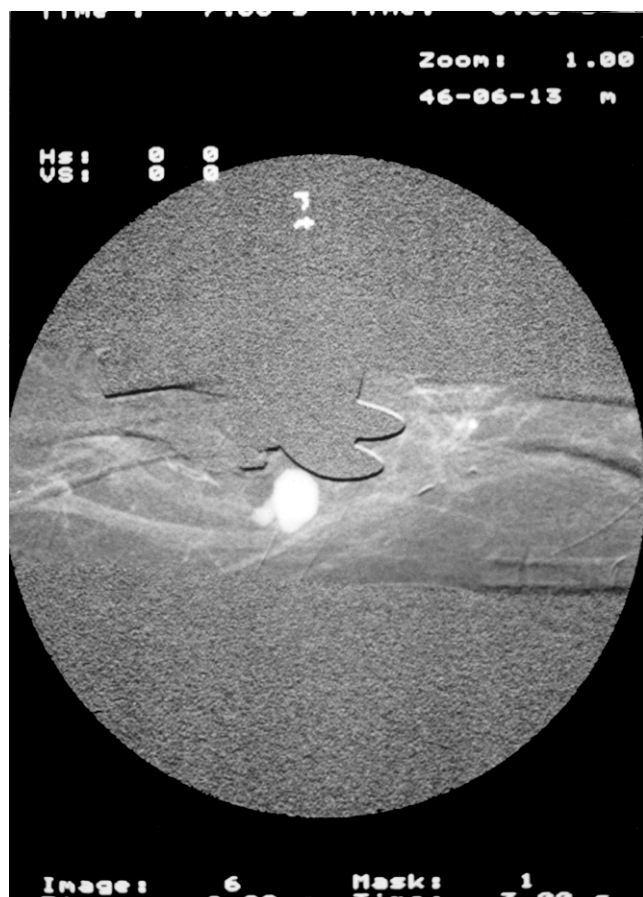
He was initially investigated with an urgent duplex scan which suggested a 1.6 cm pseudo-aneurysm of the popliteal artery with a large calf haematoma.

He subsequently underwent urgent arteriography which confirmed the pseudo-aneurysm which actually arose from the anterior tibial artery rather than the popliteal and also indicated an anomalous high origin of the anterior tibial artery. The distal run-off was satisfactory (Fig. 2).

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**Fig. 1.** Arteriogram showing high origin of the anterior tibial artery with pseudo-aneurysm formation.



**Fig. 2.** Arteriogram showing high origin of the anterior tibial artery with pseudo-aneurysm formation.

He then underwent urgent exploration which, following evacuation of the haematoma, revealed a 3 mm hole in the anterior tibial artery which was actively bleeding and was controlled with prolene sutures. A medial compartment fasciotomy was also performed in view of the compartment syndrome. There was good restoration of peripheral pulses and perfusion to the foot. The patient made an uneventful postoperative recovery and continues to do well on follow up.

## Discussion

Arterial injury is a known albeit uncommon complication of TKR<sup>3</sup>. In 1987 Rand published a review of 9000 knee replacements at the Mayo clinic, where the incidence of acute arterial injury and ischemia was 0.03%.<sup>1</sup> Shiomi *et al.* in 2001 suggested that flexion of the knee during the procedure may help minimise injury to the popliteal artery by increasing the distance between the popliteal artery and the proximal tibia based on MRI measurements.<sup>2</sup>

Apart from TKR as a cause of popliteal pseudo-aneurysm, other causes reported include trauma,<sup>4</sup> arthroscopic meniscectomy<sup>5</sup> and bony growths such as osteochondroma and exostosis.<sup>6</sup> Following an extensive literature search we believe that pseudoaneurysm of the anterior tibial artery following total knee replacement has not yet been reported. In our patient the anomalous high origin of the anterior tibial artery which is a known anomaly<sup>7</sup> resulted in it being injured rather than the popliteal artery which usually occupies this position.

## References

- 1 RAND JA. Vascular complications of total knee arthroplasty: a report of three cases. *J Arthroplast* 1987; 2: 89–93.
- 2 SHIOMI J, TAKASHI T, IMAZATO S, YAMAMOTO H. Flexion of knee increases the distance between the popliteal artery and the proximal tibia: MRI measurements in 15 volunteers. *Acta Orthopaed Scand* 2001; 72(6): 626–628.
- 3 KARKOS CD, THOMSON GJ, D'SOUZA SP, PRASAD V. False aneurysm of the popliteal artery: a rare complication of total knee replacement. *Knee Surgery. Sports Traumatol Arthrosc* 2000; 8(1): 53–55.
- 4 RADFORD D. Traumatic false aneurysm in the popliteal artery of a child. *Med J Aust* 2001; 175(11–12): 658.
- 5 KISS H, DREKONJA T, GRETHEN C, DORN U. Postoperative aneurysm of popliteal artery arthroscopic meniscectomy. *Arthroscopy* 2001; 17(2): 203–205.
- 6 MARCOVE RC, LINDEQUE BG, SILANE MF. Pseudoaneurysm of the popliteal artery with an unusual arteriographic presentation. A case report. *Clin Orthop* 1988; 234: 142–144.
- 7 In: WILLIAMS PL, WARWICK R, eds. *Gray's Anatomy*. London: Churchill Livingstone, 1980: 622–800.